Synergism effect of home cooking and ingredients enhance tomato polyphenols in Mediterranean *sofrito*

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Background and objectives:

There has been increasing the interest in the food matrix study since the bioavailability of bioactive compounds, like polyphenols, are affected by intrinsic food proprieties, processing and interaction of these factors. *Sofrito*, a typical home-made Mediterranean tomato based sauce, present a complex matrix by the addition of ingredients like olive oil, onion and garlic that can influence the content, type and bioavailability of polyphenols. The aim of this study was to evaluate whether home cooking and ingredients addition in Mediterranean *sofrito* sauce may interact and improve tomato's polyphenols.

Methodology:

A full factorial design 2^4 was applied to clarify the contribution of the ingredients: extra virgin olive oil (5-10%), onion (20-40%) and garlic (2-4%), and cooking duration (30-60 min) on the polyphenols composition of *sofrito*. The identification of tomato polyphenols was performed by UPLC-ESI-QqQ-MS/MS and the quantification using external calibration curves with standards.

Results and conclusions:

Short cooking time was able to increase the content of chlorogenic acid, ferulic acid hexoside and naringenin. The presence of olive oil enhances the extractability of some polyphenols from tomato improving the bioaccessibility. Onion shows to be capable to protect some phenolic compounds from oxidation during cooking process. The use of olive oil and onion with adequate cooking time may improve tomato's polyphenols stability.

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